

NAME:

DATE:

p1020: graded take-home open-note practice exam (version 212)**Question 1**

Let f represent a function. If $f[11] = 45$, then there exists a knowable solution to the equation below.

$$y = \frac{f\left[\frac{x}{2} + 9\right]}{5} - 3$$

Find the solution.

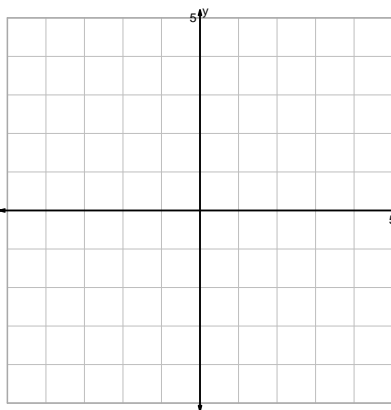
$x =$

$y =$

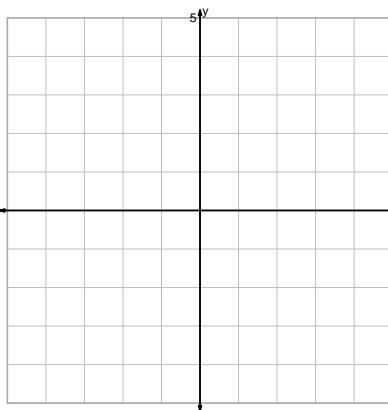
Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

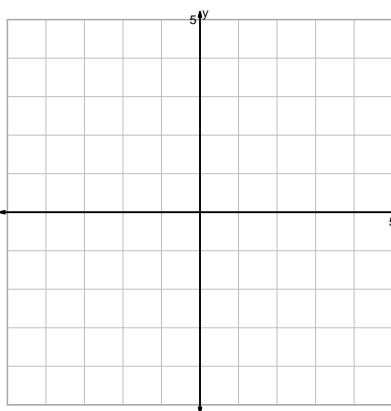
$$y = (x+2)^3$$



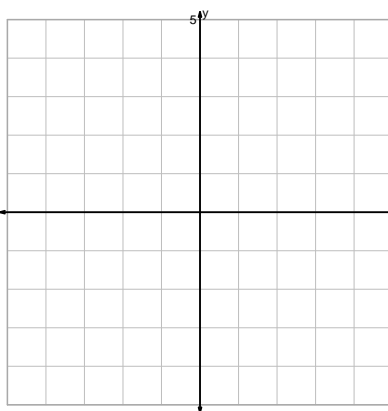
$$y = \log_2\left(\frac{x}{2}\right)$$



$$y = \sqrt{x} + 2$$

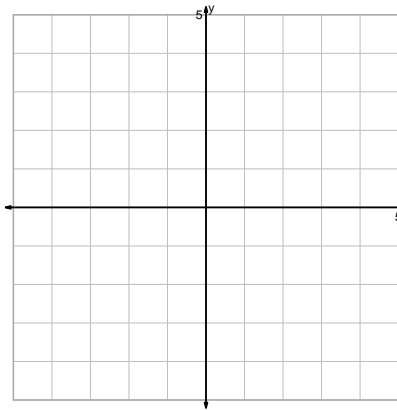


$$y = -\log_2(x)$$

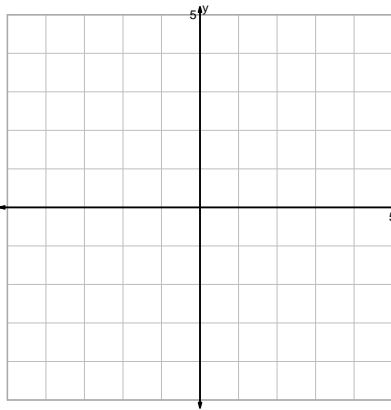


Question 2 continued...

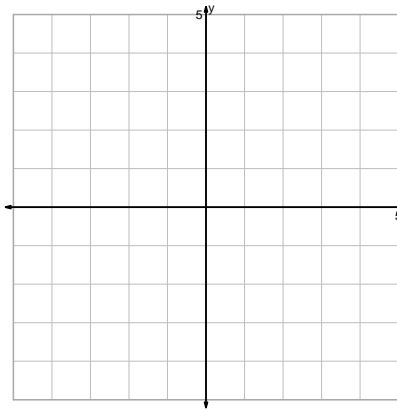
$$y = (2x)^3$$



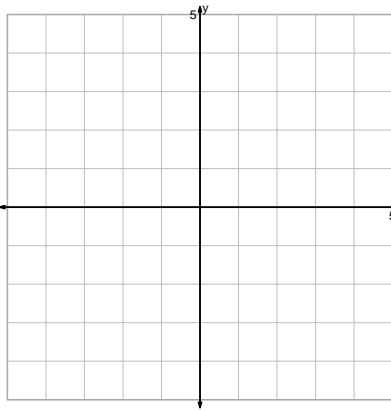
$$y = (x - 2)^2$$



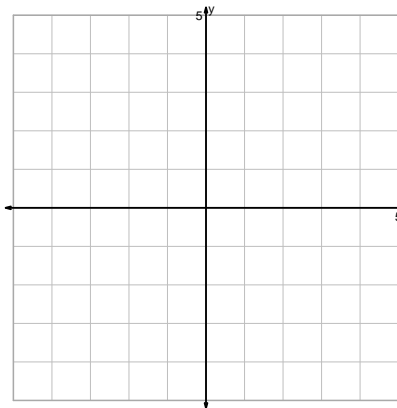
$$y = 2 \cdot x^2$$



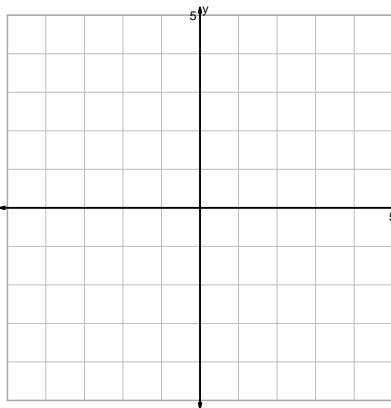
$$y = \frac{2^x}{2}$$



$$y = \sqrt{-x}$$

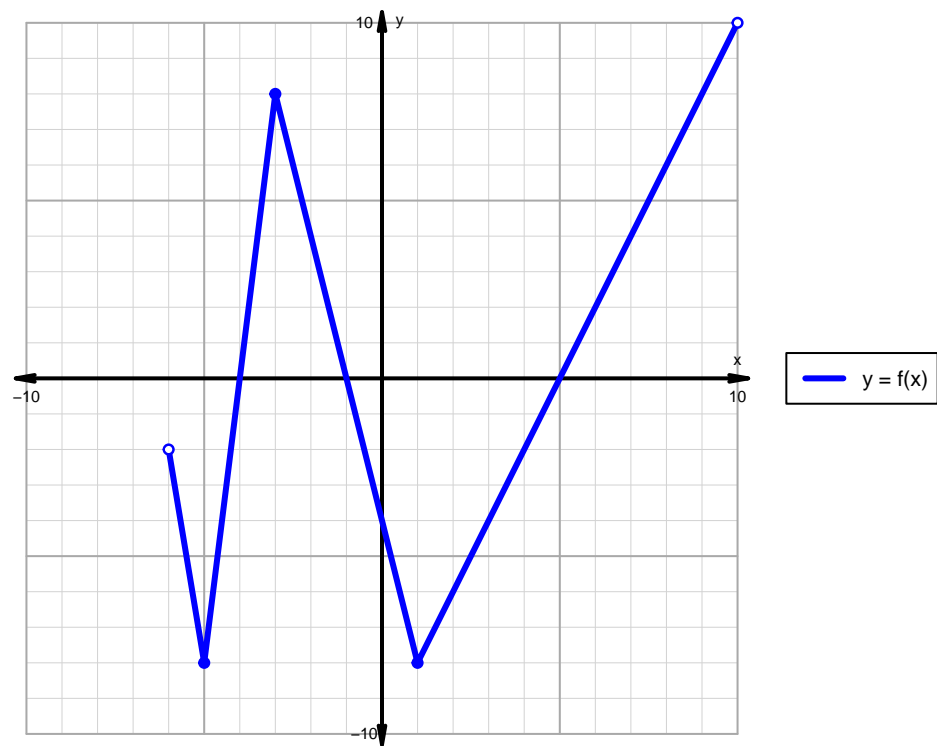


$$y = \sqrt[3]{x} - 2$$



Question 3

A function is graphed below.



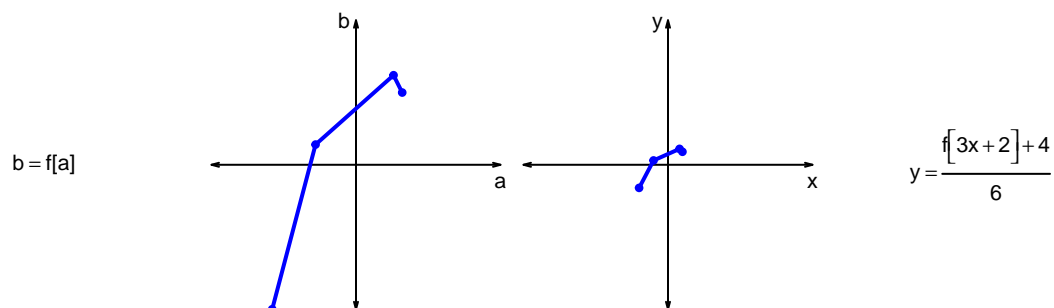
Indicate the following intervals using interval notation.

| Feature | Where |
|------------|-------|
| Positive | |
| Negative | |
| Increasing | |
| Decreasing | |
| Domain | |
| Range | |

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f[3x+2]+4}{6}$ are represented below in a table and on graphs.

| a | b | x | y |
|-----|------|-----|-----|
| -58 | -100 | -20 | -16 |
| -28 | 14 | -10 | 3 |
| 26 | 62 | 8 | 11 |
| 32 | 50 | 10 | 9 |



- a. Write formulas for calculating x from a and calculating y from b . (Or, write the coordinate transformation formula.)

- b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f[3x+2]+4}{6}$?

Question 5

A parent square-root function is transformed in the following ways:

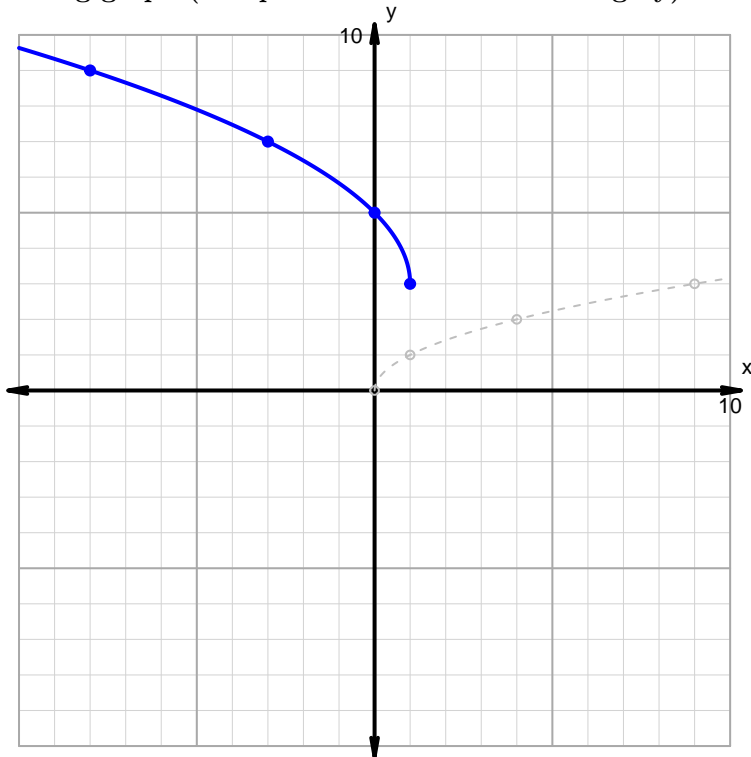
Horizontal transformations

1. Horizontal reflection over y axis.
2. Translate right by distance 1.

Vertical transformations

1. Vertical stretch by factor 2.
2. Translate up by distance 3.

Resulting graph (and parent function in dashed grey):



- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y = \frac{1}{2} \cdot |x - 3| - 2$$



| Feature | Where |
|------------|-------|
| Domain | |
| Range | |
| Positive | |
| Negative | |
| Increasing | |
| Decreasing | |